

Remarks

Claims 1-14 are pending in this application, of which amended claim 1 is independent. Claim 15 has been cancelled. Claims 2-14 have been amended to bring the claims into compliance with U.S. claim drafting practice and to provide antecedent basis. A Cross-Reference to Related Applications section heading and corresponding cross-reference have been added to the specification. No new matter has been added. Support for the amended claims can be found, at least, in the original claims as-filed. Support for the cross-reference to related applications can be found, at least, in the formal documents accompanying the instant application as originally-filed. In view of the amendments and the remarks, Applicant respectfully requests reconsideration of the instant application and notification of allowance of the claims.

Rejections of Claims 1-10 Under 35 U.S.C. § 102(e):

Claims 1-10 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,471,662 to Jaggy et al. ("Jaggy"). Applicant respectfully traverses the rejections for at least the following reasons.

Amended claim 1 recites, in part: "[a]n apparatus for generating shock waves directed at an area of a human or animal body to be treated, the apparatus comprising piezoelectric fibers integrated in a composite material" (emphasis added).

Applicant can find no express or inherent teaching of the claim 1 limitation. As a preliminary matter, Applicant notes that the specification of the instant application as-filed clearly provides that the generation of shock waves using transducers of the type taught in Jaggy is old in the art (page 2, lines 20-23). Applicant submits that the claim limitations of claims 1-10 claim patentable advances over the electro-acoustic transducers described in the specification and which are substantially identically described in Jaggy.

Further, notwithstanding Applicant has already distinguished over the transducers of Jaggy in the specification as noted above, Applicant provides herein further arguments distinguishing claims 1-10 over Jaggy. Specifically, while Jaggy may teach a therapy apparatus having piezo-electric transducer elements 2 (col. 4, lines 15-21; fig. 1), Applicant can find no express teaching of "[a]n apparatus for generating shock waves directed at an area of a human or

animal body to be treated, the apparatus comprising piezoelectric fibers integrated in a composite material” (emphasis added).

Further, while Jaggy may teach a piezo-electric transducer element 2, one of ordinary skill in the art recognizes that piezoelectric transducer elements are different from piezoelectric fibers. As background information detailing the differences between piezoelectric transducer elements and piezoelectric fibers, Applicant provides with the instant response, numerous references discussing the same. Applicant refers the Examiner to “Piezoelectric Ceramic Fiber Composites for Energy harvesting to Power Electronic Components”; “Product: Ceramic Fibers and Components Energy Harvesting Materials”; “Designing with Piezoelectric Transducers: Nanopositioning Fundamentals”; and “Active Control of Laminated Composite Beams Using a Piezoelectric Fiber Reinforced Composite Layer” for detailing the differences between piezoelectric transducer elements and piezoelectric fibers, the differences between which are well known to those of ordinary skill in the art.

Further, even if piezoelectric transducer elements were not known to be different from piezoelectric fibers, and if the Office asserts that the Jaggy inherent teaches the claim 1 limitation, Applicant submits that Applicant can find no inherent teaching of the claim 1 limitation. Applicant respectfully submits that under MPEP § 2112(IV), inherent anticipation cannot be established by mere probabilities or possibilities of a feature of a device. *See also In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). Rather, to establish inherent anticipation, the feature being asserted must be disclosed in the reference. *Id.*

Applicant submits that the claim 1 limitation: “piezoelectric fibers integrated in a composite material” (emphasis added) is not disclosed in the teaching of the piezo-electric transducer element 2 of Jaggy as Jaggy merely and vaguely discloses a “piezo-electric transducer element 2.” As background information detailing piezo-electric transducer elements, Applicant provides with the instant response, a reference describing the possibilities for the construction of a piezo-electric transducer element as well known and accepted by those of ordinary skill in the art. The reference supports the proposition that a piezo-electric transducer may be composed of a number of possible materials that do not include “piezoelectric fibers integrated in a composite material” (emphasis added). With reference to “PiezoelectricTransducers,” <http://www.ndted.org/EducationResources/CommunityCollege/Ultrasonics/EquipmentTrans/piez>

otransducers.htm, it is clear that a piezoelectric transducer may include a piezoelectric ceramic (or piezoceramic) element, a piezoelectric crystal made from quartz crystals and magnetorestrictive materials, a piezo-polymer or a composite. Accordingly, the claim 1 limitation: “piezoelectric fibers integrated in a composite material” is not disclosed in the teaching of the piezo-electric transducer 2 of Jaggy.

For at least these reasons, Applicant submits that Jaggy neither expressly nor inherently anticipates independent claim 1. Therefore, claim 1 is not unpatentable as anticipated by Jaggy.

Amended claims 2-14 depend from amended independent claim 1 and therefore include each of the limitations of amended independent claim 1. As such, claims 2-14 are not unpatentable as anticipated by Jaggy for at least the reasons provided above for independent claim 1 as well as for their additional limitations.

Specifically, with regard to limitations found in dependent claims 3-14, Applicant can find no teaching in Jaggy of “piezoelectric fibers integrated in said composite material form at least one module” (claim 3); “said at least one module forms a spatial unit” (claim 4); “said at least one module forms a unit of common electrically connected said piezoelectric fibers” (claim 5); “said at least one module is designed in at least one of a plurality of geometrically different forms” (claim 6); “several of said module are arranged next to one another” (claim 7); “said several of said module are interconnected individually, in groups or with one another” (claim 8); “said at least one module is arranged on a carrier” (claim 9); “said carrier is designed in at least one of a plurality of geometrically different forms” (claim 10); “said carrier is designed in an electrically conductive way” (claim 11); “said piezoelectric fibers are designed to be commonly contacted on respective terminals of said piezoelectric fibers” (claim 12); “said terminals include at least one electrical connection” (claim 13); or “said at least one electrical connection is connected with said carrier.” (claim 14).

As such, based on the reasons provided for claim 1 and, in the alternative, based solely on the above-mentioned limitations of dependent claims 3-14, Applicant requests reconsideration and allowance of claims 2-14.

Applicant also respectfully submits that piezoelectric fibers are not obvious in view of piezoelectric transducers for several reasons, which are expressly provided in the specification of

the instant application as-filed. First, as discussed in the specification on page 3, lines 25-37, as compared to piezoelectric ceramic elements, which tend to be found in transducers in the art, piezoelectric fibers are advantageously more simple and less costly to produce. For at least this reason, piezoelectric fibers are not obvious over piezoelectric transducers.

Second, as discussed in the specification on page 3, lines 30-36, piezoelectric fibers advantageously can be produced to be a smaller size, thereby allowing miniaturization of the piezoelectric matter, and correspondingly, the structural shape of the shock wave generator. Applicant further notes that miniaturization of the piezoelectric matter, and correspondingly the structural shape of the shock wave generator unpredictably and advantageously allows for new treatment applications, including the treatment of salivary stones as discussed on page 3, lines 40-43 of the specification of the instant application as-filed. For at least this reason also, piezoelectric fibers are not obvious over piezoelectric transducers.

Third, piezoelectric fibers can be advantageously actuated in ways previously not possible with piezoelectric transducers having ceramic elements. Advantageously and unpredictably, as discussed in "Active Control of Laminated Composite Beams Using a Piezoelectric Fiber Reinforced Composite Layer," utilizing piezoelectric fibers allows bending of the fibers as a mode of actuation while ceramic elements, which are typically used in transducers, are limited to compression or stretching as modes of actuation. Having the ability to actuate piezoelectric material is a mode of actuation that had not been previously allowed. Having access to such mode of actuation by making a piezoelectric fiber as opposed to a piezoelectric transducer is a scientifically unpredictable result. For at least this reason also, piezoelectric fibers are not obvious over piezoelectric transducers.

Accordingly, piezoelectric fibers are not obvious in view of piezoelectric transducers due to the numerous advantages and unpredictable results arising out of piezoelectric fibers when compared to piezoelectric transducers.

Rejections of Claims 11-15 Under 35 U.S.C. § 103(a):

Claims 11-15 are rejected under 35 U.S.C. § 103(a) as being anticipated over Jaggy in view of U.S. Patent No. 5,119,801 to Eizenhoefer et al. ("Eizenhoefer"). Applicant respectfully traverses the rejections for at least the following reasons.

Claim 15 has been cancelled thereby rendering the rejection of claim 15 moot. Additionally, on pages 3 and 4, the Office action states that “Jaggy fails to suggest that the module carrier of the piezoelectrics are [sic] designed in an electrically conductive way.” The Office action then asserts that Eizenhoefer cures this deficiency.

First, even if Eizenhoefer cures the aforementioned deficiency, Applicant can find in Eizenhoefer no teaching or suggestion of the claim 1 limitation: “piezoelectric fibers integrated in a composite material” (emphasis added). While Eizenhoefer, similar to Jaggy, teaches piezoelectric elements of a piezoelectric transducer (col. 1, lines 1-43), it does not teach or suggest the claimed limitation of claim 1. Accordingly, even if Eizenhoefer teaches or suggest that the module carrier of the piezoelectrics is designed in an electrically conductive way as the Office action asserts, neither Jaggy nor Eizenhoefer, alone or in combination, teach or suggest all of the claim limitations of claim 1. For at least this reason, claim 1 is not unpatentable over Jaggy in view of Eizenhoefer.

Further, claims 2-14 (of which claims 10-14 stand now rejected under Jaggy in view of Eizenhoefer) depend from amended independent claim 1 and therefore include each of the limitations of amended independent claim 1. As such, claims 2-14 are not unpatentable over Jaggy in view of Eizenhoefer for at least the reasons provided above for independent claim 1 as well as for their additional limitations.

Additionally, amended claim 12 recites, in part, “wherein said piezoelectric fibers are designed to be commonly contacted on respective terminals of said piezoelectric fibers” (emphasis added). While Eizenhoefer may teach that the front of each piezoelectric element P is provided with a metal layer KV that is in direct contact with membrane M (col. 3, lines 14-17), Applicant can find no teaching or suggestion of “wherein said piezoelectric fibers are designed to be commonly contacted on respective terminals of said piezoelectric fibers” (emphasis added). For at least this reason also, claim 12 is not unpatentable over Jaggy in view of Eizenhoefer.

Further, claims 13 and 14 depend from amended claim 12 and therefore includes each of the limitations of claim 12. As such, 13 and 14 are not unpatentable over Jaggy in view of Eizenhoefer for at least the reasons provided above for claim 12 as well as for their additional limitations.

Specifically, neither Jaggy nor Eizenhoefer, alone or in combination, teach or suggest “wherein said terminals include at least one electrical connection” (claim 13). For at least this reason also, claim 13 is not unpatentable over Jaggy in view of Eizenhoefer.

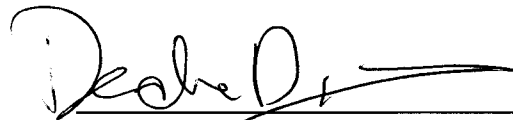
In view of the above amendments and remarks, Applicant believes that the application is in condition for allowance. Favorable reconsideration of the application as amended and allowance of the claims is respectfully requested.

Applicant’s Attorney cordially invites the Examiner to contact the undersigned at the telephone number provided below if such will advance the prosecution of the instant application.

If any additional fees are due in connection with the filing of this Amendment or the accompanying papers, or otherwise in the course of prosecution of the instant application, please charge the fees to Hunton & Williams Deposit Account No. 50-0206, Order No. 69643.001500.

Applicant has included a petition and the requisite fees for the appropriate extensions of time under 37 C.F.R. § 1.136. Any additional fee should also be charged to Deposit Account No. 50-0206, Order No. 69643.001500. Any overpayment can be credited to Deposit Account No. 50-0206, Order No. 69643.001500.

Respectfully submitted,



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